

CLAIMS

1. A process for the deacidification of wine, i.e. for the reduction of the contents of volatile acid compounds that are present as a solution in said wine, comprising the following steps in a sequence:

- a first stage in which the solution to be processed (A) is separated into a first concentrate (B) and a first permeate (C), in which first permeate (C) there are included the compounds that are responsible for said volatile acidity of the wine, further to at least most of the solvent; and

- a second stage in which said first permeate (C) is in turn separated into a second concentrate (F), in which there are included the compounds that are responsible for said volatile acidity of the wine, and a second permeate (E) that comprises the solvent.

2. A process according to claim 1, further comprising, between said first and said second stage, a third stage in which said second permeate (E) joins again said first concentrate (B) and is mixed up again with the initial solution (A).

3. A process according to claim 1, further comprising, between said first and said second stage, an intermediate stage in which substances (G) are added to said first permeate (C) that are adapted to at least partially neutralize said compounds that are responsible for the volatile acidity of the wine.

4. A process according to claim 3, wherein said substances (G) that are added to said first permeate (C) are sodium, potassium or calcium compounds, such as in particular hydroxides, carbonates, tartrates or acetates.

5. A process according to claim 1, wherein during said first and said second stages, the initial solution (A) and the first permeate (C), respectively, are held under pressure.

6. A process according to claim 1, wherein said process is carried out in a continuous manner without any solution of continuity.

7. A process according to claim 1, wherein said process is carried out in a discontinuous manner.

8. An apparatus for the deacidification of wine, said deacidification occurring through a two-stage process comprising a first stage in which the solution to be processed (A) is separated into a first concentrate (B) and a first permeate (C), in which first permeate (C) there are included the compounds that are responsible for said volatile acidity of the wine, further to at least most of the solvent, and a second stage in which said first permeate (C) is in turn separated into a second concentrate (F), in which there are included the compounds that are responsible for said volatile acidity of the wine, and a second permeate (E) that comprises the solvent, said apparatus comprising:

at least one process station (3, 7) having membrane means for separation of the compounds that are responsible for the volatile acidity of the wine, and

means (12) to add solid or liquid additives (G) to the permeate (C) resulting from the first stage of the said two-stage process.

9. An apparatus according to claim 8, further comprising a continuous apparatus consisting of an initial process station (3) where said first stage is performed, a final process station (7) where said second stage is performed and an intermediate reaction station (6) consisting of:

an upright container (61) adapted to be filled with the said additives (G),
a grille (62) constituting the bottom wall of said container (61),
and a tank (63) for housing the same container and a siphon (64),
wherein the said tank (63) has an inflow branch (55) for the permeate (C) coming from the said initial process station (3) and an outflow branch (56) downstream of the said siphon (64) for conveying the permeate through to the said final process station (7) upon undergoing the desired treatment imparted by the contact with said additives (G).

10. An apparatus according to claim 9, further comprising pump means (22, 26) adapted to keep the solution to be processed (A) under pressure as it is being treated in the said initial process station (3).

11. An apparatus according to claim 9, further comprising pump means (54) adapted to keep the said first permeate (C) under pressure as it is being treated in the said final process station (7).

12. An apparatus according to claim 8, further comprising, ahead of said initial process station (3), filter means (25) that are adapted to prevent the membrane means that are a part of the two process stations (3, 7) to be damaged by solid particles that may be present in the solution to be processed (A).

13. An apparatus according to claim 8, wherein said apparatus is a discontinuous apparatus where a single process station (200) constitutes in a first stage said initial process station and, in a second stage, under utilization of filtering membranes provided with a different selectivity as compared with the ones used in said first stage, constitutes the final process station, in which said apparatus further comprises: a first reservoir (100), which in the first stage collects and stores the solution to be processed (A) for delivery to said process station (200) and, in the second stage, receives the wine processed in the same process station; a second reservoir (140), which during said first stage receives the first permeate (C) and, during said second stage, supplies said first permeate (C) to said single process station (200) upon undergoing the desired treatment imparted by the contact with said additives (G).